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wherein A is a bridging group containing a Group 13-15 element; each E is independently a Group 15 or 16 element covalently bonded to M; each R is independently a C₁-C₃₀ containing radical or diradical group which is a hydrocarbyl, substituted-hydrocarbyl, halocarbyl, substituted-halocarbyl, hydrocarbyl-substituted organometalloid, halocarbyl-substituted organometalloid, m and n are independently 1 or 2 depending on the valency of E; and p is the charge on the bidentate ligand such that the oxidation state of MX_r is satisfied.

Claims (See Appendix B for marked up Claims)

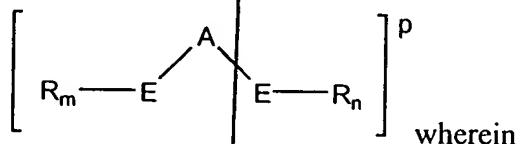
Please delete Claims 2-5, 7-12, 14-16, 21, 28, 29, 31, and 32. Please insert new Claims 33-39. A clean, complete set of claims for this application follows.

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1. (Amended three times) A late transition metal catalyst precursor for olefin polymerization comprising a Group-9, -10 or -11 metal connected to a bidentate ligand immobilized on a solid support where the late transition metal loading is less than 100 micromoles transition metal compound per gram of solid support, wherein the catalyst precursor has the formula:

LMX_r wherein

- (a) M is a Group 9, 10 or 11 metal;
- (b) L is a bidentate ligand defined by the formula:



- (i) A is a bridging group containing a Group 13-15 element;

- (ii) each E is independently a Group 15 or 16 element covalently bonded to M;
- (iii) each R is independently a C₁-C₃₀ radical or diradical group which is a hydrocarbyl, substituted hydrocarbyl, halocarbyl, substituted halocarbyl, hydrocarbyl-substituted organometalloid, halocarbyl-substituted organometalloid,
- (iv) m and n are independently 1 or 2 depending on the valency of E; and
- (v) p is the charge on the bidentate ligand such that the oxidation state of MX_r is satisfied;

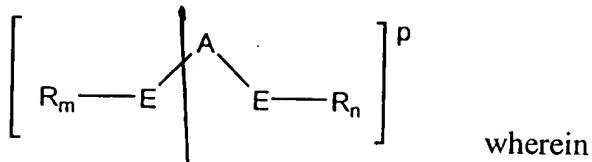
(c) each X is, independently, a hydride radical, a hydrocarbyl radical, a substituted hydrocarbyl radical, a halocarbyl radical, a substituted halocarbyl radical, hydrocarbyl-substituted organometalloid or halocarbyl-substituted organometalloid; a univalent anionic ligand; a neutral hydrocarbyl-containing donor ligand; a neutral non-hydrocarbyl atom containing donor ligand; or two Xs are joined and bound to the metal atom to form a metallacycle ring containing from 2 to 20 carbon atoms; or two Xs are joined to form an anionic chelating ligand; and

(d) r is 1, 2 or 3.

6. (Amended three times) A late transition metal catalyst precursor for olefin polymerization comprising a Group -9, -10 or -11 metal connected to a bidentate ligand immobilized on a solid support, wherein the catalyst precursor has the formula:

LMX_r wherein

- (e) M is a Group 9, 10 or 11 metal;
- (f) L is a bidentate ligand defined by the formula:



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- (i) A is a bridging group containing a Group 13-15 element;
- (ii) each E is independently a Group 15 or 16 element covalently bonded to M;
- (iii) each R is independently a C₁-C₃₀ radical or diradical group which is a hydrocarbyl, substituted hydrocarbyl, halocarbyl, substituted halocarbyl, hydrocarbyl-substituted organometalloid, halocarbyl-substituted organometalloid;
- (iv) m and n are independently 1 or 2 depending on the valency of E; and
- (v) p is the charge on the bidentate ligand such that the oxidation state of MX_r is satisfied;

(g) each X is, independently, a hydride radical, a hydrocarbyl radical, a substituted hydrocarbyl radical, a halocarbyl radical, a substituted halocarbyl radical, hydrocarbyl-substituted organometalloid or halocarbyl-substituted organometalloid; a univalent anionic ligand; a neutral hydrocarbyl-containing donor ligand; a neutral non-hydrocarbyl atom containing donor ligand; or two Xs are joined and bound to the metal atom to form a metallacycle ring containing from 2 to 20 carbon atoms; or two Xs are joined to form an anionic chelating ligand; and

(h) r is 1, 2 or 3.

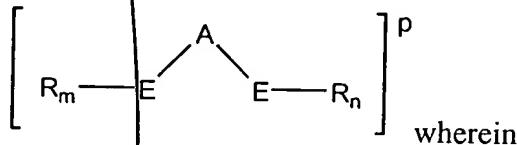
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13. (Amended three times) A late transition metal catalyst precursor, essentially without residual solvent, for olefin polymerization comprising a Group -9, -10 or -11 metal connected to a bidentate ligand immobilized on a solid support, wherein the catalyst precursor has the formula:

LMX_r wherein

(a) M is a Group 9, 10 or 11 metal;

(b) L is a bidentate ligand defined by the formula:



wherein

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- (i) A is a bridging group containing a Group 13-15 element;
- (ii) each E is independently a Group 15 or 16 element covalently bonded to M;
- (iii) each R is independently a C₁-C₃₀ radical or diradical group which is a hydrocarbyl, substituted hydrocarbyl, halocarbyl, substituted halocarbyl, hydrocarbyl-substituted organometalloid, halocarbyl-substituted organometalloid;
- (iv) m and n are independently 1 or 2 depending on the valency of E; and
- (v) p is the charge on the bidentate ligand such that the oxidation state of MX_r is satisfied;

(c) each X is, independently, a hydride radical, a hydrocarbyl radical, a substituted hydrocarbyl radical, a halocarbyl radical, a substituted halocarbyl radical, hydrocarbyl-substituted organometalloid or halocarbyl-substituted organometalloid; a neutral hydrocarbyl-containing donor ligand; a univalent anionic ligand; a neutral non-hydrocarbyl atom containing donor ligand; or two Xs are joined and bound to the metal atom to form a metallacycle ring containing from 2 to 20 carbon atoms; or two Xs are joined to form an anionic chelating ligand; and

(d) r is 1, 2 or 3.

Claim 17
17. (Amended three times) A catalyst system wherein the catalyst precursor of Claim 1, 6, or 13 has been treated with a noncoordinating anion precursor to form a catalyst comprising a metal cation and a noncoordinating anion.

18. The catalyst system of Claim 17 wherein the noncoordinating anion is tetrakis(perfluorophenyl)boron.

Claim 19
19. (Amended Three Times) The catalyst system of Claim 17 wherein the noncoordinating anion precursor is a halide salt of Group-13-16 metals or metalloids.

20. (Twice Amended) The catalyst system of Claim 19 wherein the catalyst-precursor-to-noncoordinating-anion-precursor molar ratio is from 10:1 to 1:10.

Claims 22-26
22. (Amended Once) A polymerization process for polymerizing olefinically unsaturated monomers comprising contacting one or more of ethylene, C₃-C₂₀ olefin, C₄-C₂₀ cyclic olefin, C₄-C₂₀ non-conjugated diolefin, C₈-C₂₀ aromatic substituted olefin, C₄-C₂₀ gem-substituted olefins, or C₂₀-C₁₀₀₀ olefin macromer with a catalyst system of Claim 17.

23. (Amended Once) The polymerization process of Claim 22 comprising conducting the contacting step under gas phase polymerization conditions.

24. (Amended Once) The polymerization process of Claim 23 wherein the reactor temperature is from -100 °C to 150 °C and at a pressure up to 7000 kPa.

25. The polymerization process of Claim 24 additionally comprising a scavenging compound.

Claim 26
26. (Amended Once) The polymerization process of Claim 22 comprising conducting the contacting step under slurry polymerization conditions.

27. The polymerization process of Claim 26 wherein the reactor temperature is from 0 °C to 150 °C and at a pressure from 0.76 MPa to 4.8 MPa

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30. (Amended Twice) The catalyst system of Claim 17 wherein LMX_r has a square planar geometry.

33. (New) The catalyst system of Claim 17 wherein the particle support comprises silica.

34. (New) The catalyst system of Claim 17 wherein the supported catalyst is a homogeneous supported catalyst.

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35. (New) The catalyst system of Claim 17 wherein the metal complex is a first row metal complex.

36. (New) The catalyst system of Claim 17 wherein the bidentate ligand structure comprises a bridging element and wherein the bridging element has at least one conjugated group.

37. (New) The catalyst system of Claim 17 further comprising an organoaluminum compound.

38. (New) The catalyst system of Claim 37 wherein the organoaluminum compound is an alumoxane.

39. (New) The catalyst of Claim 38 wherein the catalyst-precursor-to-alumoxane molar ratio is from 1:500 to 10:1.

40. (New) The catalyst system of Claim 17 wherein the metal of the metal cation is Ni.

REMARKS

Reconsideration of the present claims in light of the claim amendments and the remarks which follow, is respectfully requested.

Claims before the Examiner are claims 1, 6, 13, 17-40.

The term "covalently" has been reinserted at page 3, line 10, of the specification and in the claims, in order to progress the claims towards allowance. The disclosure when taken as a